

REMARKS

Careful consideration has been given to the Official Action of February 5, 2008 and reconsideration of the application is respectfully requested.

Claim 8 stands rejected by the Examiner under 35 USC 112, first paragraph, as allegedly failing to comply with the written description requirement.

Claims 1, and 7-9 stand rejected by the Examiner under 35 USC 103(a) as being allegedly unpatentable over US Patent No. 4,118,201 (hereafter Yan) in view of US Patent No. 4,409,094 (hereafter Longwell).

Claim 2 stands rejected by the Examiner under 35 USC 103(a) as being allegedly unpatentable over Yan in view of Longwell, and further in view of US Patent No. 5,178,785 (hereafter Dolan).

Claim 8 has been amended to correct the typographical error (250 instead of 205), thereby overcoming the Examiner's rejection under 35 USC 112. Support for this amendment can be found at, for example, page 4, line 15 of the original specification.

Claim 1 has been amended to recite more clearly the distinguishing features of the invention. Support for the amendments can be found at, for example, page 6, lines 12-13 and page 5, lines 12-13.

Claims 10-12 have been added to recite features of the tubular furnace. Support for these claims can be found at, for example, page 4, lines 13-16.

Claims 13-15 have also been added more completely to define the subject matter which Applicant regards as his invention. Support for these claims can be found, for example, at page 5, lines 1-13 and the examples given on pages 5-7.

The claims as now presented are distinguished and patentable over the references cited by the Examiner, taken singly or in combination, as will be discussed hereafter.

The claimed invention is directed to a device for reduction of organic sulphur from high sulphur coal. The device includes a furnace, and assembled in the furnace a reactor which has three separate zones with three different and distinct ranges of temperature: a steam heating zone (400-500 degree C), a promoter zone for heating a promoter therein (950-1100 degree C), and a reaction zone for reacting the high sulphur coal with a steam (900-950 degree C).

Claim 1 now further defines the promoter to be heated in the promoter zone to be a promoter mixture of copper-iron turnings in a ratio of 1:9.

New claim 13 also recites the promoter mixture and further recites a reaction zone comprising the high sulphur coal that can react with the steam passing through the reactor to reduce the organic sulphur from the high sulphur coal.

The Examiner contends that Yan discloses the three zones of the claimed invention. However, the three zones of Yan are distinguished from the claimed invention as follows.

1. The bottom zone I (5) of Yan has a temperature range of 1800-3000 degree F (982 - 1646 degree C; see page 6, line 12). This zone is the synthesis gas generating region and is actually responsible for maintaining the temperature in both zone I and zone II. In contrast, in the claimed invention, the steam heating zone is the lowest temperature range among the three zones and so is not regulating the temperatures of the other zones (it is the furnace which regulates the temperature ranges of the zones of the reactor).

2. The claimed invention does not require the steam, air, or auxiliary coal to be fed into the steam heating zone as required by Yan.

3. Zone II (10) of Yan is the "fluidized reaction zone" having a temperature range of 1100-1700 degree F, preferably about 1500 degree F (593-926 degree C, preferably 815 degree C; see page 6, line 65). In contrast, the claimed invention provides a promoter zone that is maintained at 950-1100 degree C, which is the highest temperature range among all three zones of the reactor.

4. The promoter zone of the present invention contains a promoter mixture of copper-iron in the ratio of 1:9. In contrast, Yan merely feeds a pulverized coal into zone II (10), which the Examiner contends as reading on the promoter zone of the claimed invention.

5. The actual reaction of the coal particles and steam takes place in the reaction zone of the present invention, which is maintained at a temperature range of 900-950 degree C instead of in zone II (10) of Yan.

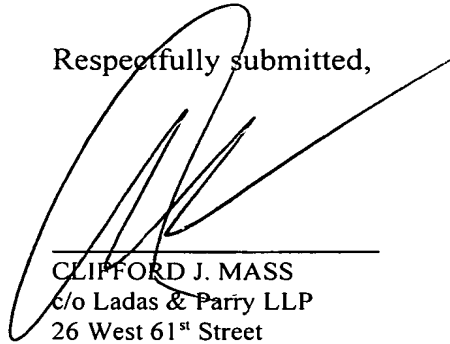
6. In view of points 5 and 6 above, Yan does not teach or disclose a promoter zone as claimed in claim 1.

Longwell and Dolan were cited by the Examiner for disclosure of other features. However, none of these references discloses the three zones of claim 1, and cannot make up for the deficiencies of Yan. Inasmuch as none of the references cited by the Examiner teaches or suggests the claimed three zones of the reactor, their combination cannot, either.

Therefore, since none of the references cited by the Examiner discloses each and every feature of claim 1, the cited art cannot set forth even a *prima facie* case of obviousness for the invention as claimed (see MPEP 2143).

In view of the above action and comments, it is respectfully submitted that the application is in condition for allowance, and favorable reconsideration of the application as amended is earnestly solicited.

Respectfully submitted,

A large, stylized handwritten signature in black ink, appearing to read 'C. Mass', is written over a horizontal line.

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